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ABSTRACT

The workplace is changing, and both education for employment in the workplace and a subset of the educational system that is directed towards meeting the career development needs of students and adult workers will also change. The basic four-part model of career guidance will continue to be useful. The tools and techniques that are used in each part of the model--inventory (assessment), information, counseling, and placement and followup--are most likely to change. Trends in the workplace that will have an impact on the career development needs of industrial technical workers include the change to an information society, high technology, and demographic changes. The type of career guidance for both students and workers in industrial/technical settings involves a shift in emphasis in both the inventory and information components of the career guidance model to being computer based. As the number of computer-based guidance systems grows, the number of counselors may increase. More counseling will be handled through group processes and will occur after high school graduation. The computer will also be used extensively in job placement. Followup will aid in job adjustment and information collection. (YLB)

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Meeting the Career Development Needs of Tomorrows Industrial/Technical Worker

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Meeting the Career Development Needs of
Tomorrows Industrial/Technical Workers

This paper is predicated on the motion that the workplace is changing, that education for employment in the workplace will also change and that a subset of the educational system which is directed towards meeting the career development needs of both students and adult workers will also change. Furthermore, given the diversity of the workplace and the educational systems that prepares individuals for work, this paper focuses on the career development needs of those individuals whose workplaces are considered to be of an industrial and/or technical nature. While much that is described here in the way of career guidance programs is generic and, in fact, would meet the needs of a great variety of workers, the intent is to address that aspect of career guidance that has traditionally been offered as part of vocational/industrial/technical education of a non-baccalaureate nature.

The paper is organized around three logical themes that progress from the known towards the unknown. The first is a description of a career guidance model whose evolution can be traced back to the beginnings of the vocational guidance movement. This model, however, is still much in use today and, I believe, has utility for projecting about the future of career guidance. The second component of this paper attempts to examine in a macro fashion the likely nature of the changing workplace, especially as it pertains to industrial/technical workers. This picture is only painted in broad strokes here sufficient to move to the third section of the paper which attempts to project what

career guidance programs for both youth and adults might look like if they evolve sufficiently to keep up with the changing industrial/technical workplace. It is expected that the several papers that preceded this one provide much more insight into the changing nature of work and education for industrial/technical work, and that the evolution of career guidance described here makes sense within the scenarios they have described.

A Vocational (Career) Guidance Model

The history of vocational guidance can be traced back to the early twentieth century and is somewhat intertwined with the beginnings of vocational education. Herr and Cramer (1984, Ch. 1) described the connection between vocational education and vocational guidance as one where vocational educators predominated as guidance practitioners and where both were seen as complementary components of the educational enterprise. Although most industrial and vocational educators can recite by heart the work of the National Society for the Promotion of Industrial Education in 1906 and the passage of the Smith-Hughes Act of 1917 there may be some who do not know about Frank Parsons' (1909) posthumously published book Choosing a Vocation which launched modern day vocational guidance. The Parsonian model as it has come to be called required the following three components.

> First, a clear understanding of yourself, aptitudes, interests, resources, limitations, and other qualities. Second, a knowledge of the requirements and conditions of success, advantages and disadvantages, compensations, opportunities, and prospects in different lines of work. Third, true reasoning on the relations of these two groups of facts. (Parsons, 1909, p.5)

Although vocational guidance was not specifically added to vocational education legislation until the George Dean Act of 1938 it was always considered part of the responsibility of vocational educators. Significant numbers of specialists in vocational guidance did not emerge until post WWII and the training of vocational counselors in large numbers did not begin until the passage of the National Defense Education Act of 1958. Subsequent legislation for the preparation of counselor, the vocational education amendments of 1963, 1968 and 1976, the refinement of vocational development theory as proposed by Super (1953) and others, and the career education movement of the seventies have served to confirm and expand the original vocational guidance model proposed by Parsons. In its present form as practiced today vocational (career) guidance can be viewed as being composed of the following four components which are presented graphically as Figure 1.

1. Inventory (assessment)- As in Parsons' time this is composed of information about an individuals characteristics such as skills, knowledges, aptitudes, judgements, attitudes, traits and interests. Most developments in this area have been in refinements of measurement techniques.

2. Information - Also as in the Parsons model this is made up of knowledge about occupational and educational requirements and conditions. The biggest change in this area is in the volume and form of information available.

3. Counseling (decision-making) This aspect of the model has changed considerably since Parsons' time and has been refined

along two dimensions. First of all, the art and science of counseling defined as "a one-to-one or one-to-group helping relationship" has developed many techniques and a theoretical base. Secondly, decision-making which is another way to view what Parsons was talking about when he used the term "true reasoning" has also developed both theoretically and as a group of techniques.

4. Placement & Follow-up - This part of the modern day career guidance model was not part of the original Parsons concept. It is hard to pinpoint exactly when it became part of modern practice, but is was already part of many vocational counselors responsibilities in the sixties. It appears to have gotten its emphasis from the vocational education legislation of the sixties and seventies which supported and/or required placement and follow-up activities. Placement specifically refers to both educational and job placement as a natural extension of the guidance process. Follow-up includes both formal studies to measure the success of students and programs as well as informal and personal support for individuals to help them with educational and job adjustment.

The model as drawn in Figure 1 portrays the inventory and information components as equal in magnitude and importance and contributing equally to the counseling process. The placement and follow-up component is broader although thinner than the other three parts. That is, it supports the entire system and may be utilized a number of times to implement and examine the results of the interaction of inventory and information in the

presence of counseling. It is thinner in that it has no real substance of its own and depends entirely upon the decision-making that occurs through the counseling process.

The evolution of career guidance and a contemporary view of a career guidance model is presented here in some detail not to dwell on the past or even the present, but to provide a basis for projecting how career development needs will be met in the future using career guidance in the schools, in industry and in the community. It is my contention that even though the workplace will change the basic four part model of career guidance will continue to be useful. It is the tools and techniques which are used in each part of the model that are most likely to change.

The Charging Workplace

This section of the paper is written with the assumption that the preceding authors have dealt with the shift in jobs from goods producing to service producing and the changes in our educational system necessary to prepare workers for this shift. However, in order for this paper to stand on its own and as a means to project how our career guidance delivery will change to meet tomorrows needs it is necessary to make some guesses about what tomorrow will look like, not just in the area of education for work, but in all ways that affect the human condition. Given this rather tall order it would be presumptuous and probably not fruitful in a short amount of time and space to project the future starting from scratch and trying to think about all of the possibilities. Therefore, I have chosen the easier and hopefully

wiser course of building on the insights of others, principally those of Naisbitt (1982) as described in his book Megatrends. The following ten trends are those foreseen by Naisbitt as a movement from our current or past condition towards the future:

	From	Towards
1.	an industrial society . . .	an information society
2.	forced technology . . .	high tech and high touch
3.	a national economy . . .	a world economy
4.	short term . . .	long term
5.	centralization . . .	decentralization
6.	institutional help . . .	self help
7.	representative democracy . .	participatory democracy
8.	hierarchies . . .	networking
9.	north . . .	south
10.	either/or . . .	multiple options

While not all of the trends foreseen by Naisbitt will have equal impact on the career development needs of industrial/technical workers, to the extent that they materialize they will all have some affect. In addition to the trends predicted by Naisbitt, we already know with a fair degree of certainty that there will be a change in the age composition of the labor force with the baby boom generation becoming older followed by the smaller cohorts of the late 60's and 70's. This will result in greater competition for jobs among older workers with a shortage of workers in jobs typically held by the young. As retirement nears for the baby boom generation, there may be too few workers to both staff the workforce and produce enough to provide for the

needs of those who have retired. The solution to this could be either a greater reliance on technology or a longer work life for the older adult of that time. This imbalance in the workplace both in the initial stages when there are relatively too many workers and the latter stages when there are relatively too few workers will also place greater pressures on societies attempts to reduce the past discriminations in the labor market against women and minorities. In reaction to these trends, there are already efforts to change the nature of work, many of which have been described in O'Toole and others (1973) Work In America and Levitan and Johnston's (1973) Work Is Here To Stay, Alas. Herr and Cramer (1984, p. 78) provide the following catalogue of predicted changes in the workplace that have a likely effect on career guidance:

-job redesign
-job sharing
-flexible scheduling
-quality control circles
-more part time jobs
-sabbaticals
-job rotation
-flexibility of rewards
-power sharing
-flexible retirement
-non-traditional rewards
-improved career ladders
-home-based work
-educational benefits

From the perspective of the career development needs of tomorrows industrial/technical workers, the above described trends portend changes that will affect young and older workers, but perhaps not all in the same way. By examining the trends in respect to industrial/technical type work, examples of changing career development needs and circumstances can at least by hypothesized. Examples of these changes are provided here

separately for youth and adults without documentation or reference to their probable cause.

Youth who are preparing for, or are working in, industrial/technical settings will:

1. likely need more education and/or training than is provided in high school.
2. spend more school time learning basic academic skills before receiving technical or job skill training.
3. receive self assessment and occupational information which is largely free of sex bias.
4. need to be more mobile and flexible (e.g. prepared to leave ones home town) in order to find rewarding work.
5. utilize computerized career guidance systems which provide both self assessment and educational and occupational information.
6. change jobs, employers and locations more frequently.
7. have more leisure time and/or time not devoted to work.
8. participate more in decisions made about their working conditions.
9. find social skills as necessary as technical skills for success on the job.

Adults who are working in industrial/technical settings will:

1. receive career counseling services as part of their employee benefits.
2. need continual periodic retraining.
3. likely make major mid-career occupational changes.
4. find opportunities for child rearing sabbaticals for both men and women.
5. need to move their household and family for reasons of employment.
6. plan for and begin retirement at an earlier age.

7. be trained to and will utilize a computer in some aspect of their work.

8. experience job stress and burnout or will know someone who has.

9. likely be a member of a dual career family.

Career Guidance for the Industrial/Technical Student and Worker

On October 19th of this year, President Reagan signed into law the Carl Perkins Vocational Education Act of 1984. Within this legislation there is a separate section (Part D) titled Comprehensive Career Guidance and Counseling Programs which makes explicit the continuing relationship between career guidance and vocational education. It is difficult to know at this time how this new legislation will affect future delivery of career guidance services to those preparing for or engaged in industrial /technical work. However, with or without the federal legislative support it is likely that career guidance will continue to change partly because of forces operating within the profession and partly because of the changing nature of work as described above. Utilizing the four part career guidance model (Figure 1), the type of career guidance both students and workers in industrial/technical settings might expect to receive in the future is described here in some detail.

Inventory

For the most part, inventory (assessment) implies testing of some type and there are many instruments currently available for career guidance purposes. In the National Vocational Guidance Association publication A Counselors Guide to Vocational Guidance

Instruments (Kapes and Mastie, 1982), the top forty instruments in use today are reviewed while another seventy are briefly described. However, the inventory function is more than using standardized tests and includes anything that enhances self knowledge such as personal work related experiences. Assessment within a career guidance model however, will probably continue to rely heavily on measurement devices, but their nature will change generally in the direction of becoming more user friendly. In a recent article concerning the future of testing in school counseling Engen and Kapes (1984) describe five future trends that are apparent. They are: (1) greater use of the microcomputer, (2) more combined instruments, (3) more emphasis on self administration, (4) increased attention to special groups, and (5) more emphasis on test interpretation. Of all these trends, the move towards microcomputer administered, scored and interpreted tests will probably have the greatest impact. Within five years, almost all standardized measurement instruments used in career guidance (e.g. aptitude, interest and values) will be available in one or more microcomputer versions. Many measures of interest and values have already been adapted for microcomputer and measures of aptitude will follow shortly. With the help of the computer it will become even easier to simultaneously combine aptitude and achievement from the cognitive domain with interests and values from the affective domain. Furthermore, the computer will make self administration and scoring much easier since even for more complex instruments, the answer keys as well as the interpretation will be stored in a memory chip. While all of this computerization may appear to be quite sterile and

insensitive, it will make possible and perhaps encourage the development of instruments for special populations. Groups which will receive special attention include men and women in occupations non-traditional for their sex, handicapped children and adults, racial and ethnic minorities and especially older adults dealing with career re-entry and mid-career change. All of the changes described so far move in the direction of making the individual more responsible for his or her own self assessment. However, as a counterbalance to this trend there will be more attention given to test interpretation and this is where the high tech will be combined and softened by the high touch of a counselor. The counselors role will focus much more on helping with self discovery and integration of information into the self-concept giving credence to Super's (1963) notion of career choice as implementation of the self concept. This approach to assessment will combine career exploratory experiences through such means as job trials, cooperative education and work study with hard data obtained from the computer interacting with the individual. The counselor will move from measurement specialist towards a human development specialist in this component of the career guidance model. It needs to be stressed here that this type of assessment will be available both to school age youth as well as young, mid-career and older adults.

Information

Occupational/educational information has been the backbone of career guidance since the days of Parsons. Until fairly recently, almost all occupational/educational information was

disseminated through printed material such as the well known Dictionary of Occupational Titles, first issued in 1939 and the Occupational Outlook Handbook. Beginning in the sixties, such medium as microfische, audio tapes and film became more plentiful as sources of occupational/educational information. Even at that time, there were efforts underway to develop the computer as a career guidance tool capable of storing and selectively dispensing occupational/educational information. It is worth noting here that the first computer based career guidance system to successfully be utilized in a public school setting was developed by Impelliteri (1968) at Penn State University with vocational education research funds.* The first successful field trials were held in the Altoona, Pennsylvania public schools in late 1966.

Since that early beginning, there has been a great deal of continued research and development in this area and today there are over 25 such systems currently operating (Pyle, 1984). Harris-Bowlsbey (1983), who is also one of the pioneers in this field, differentiates between computer-based information systems and computer-based guidance systems and this is an important distinction. Most of the systems available are primarily information oriented, with the most prominent among these being

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*Joseph T. Impellitteri was an active member of NATTE and doctoral advisor to this author. He died in a car accident on May 7, 1972.

the Guidance Information System (GIS) and the Career Information System (CIS). Many states use some variation of these systems with State Occupational Information Coordinating Committee (SOICC) data and federal funding support fr m the Vocational Education Amendments of 1976 (PL 94-482). Among the more complex guidance systems, the System of Interactive Guidance and Information (SIGI) and Discover are the most utilized. While most of these systems were first developed to run on main-frame computers, in the last several years many have become available on microcomputer and this has accounted for a significant increase in their use. The career information systems are designed around the standards set by the Association of Computer-Based Systems for Career Information (ACSCI). These systems generally contain eight categories of information about occupations such as job duties, working conditions and employment outlook as well as information on programs of study and training and postsecondary schools (McKinlay, 1984). The career guidance systems such as SIGI and Discover generally contain the same information components as described above, in addition to components which provide for self-assessment, decision-making and possibly planning for appropriate action (Katz and Skatkin (1983). They attempt to meet more completely, the career guidance needs of their users by providing both inventory and information components of the Parsons model with some help in the decision-making area to bring about some degree of true reasoning without the use of a counselor.

With the rapid development of these computer-based career information and/or guidance systems on microcomputer it is likely

that those youth who are preparing for employment in industrial/technical areas will receive much of their self-assessment and occupational/educational information from a rather friendly computer. Furthermore, it is likely that those already employed in industrial/technical work will receive continued guidance information from these types of systems whether they be in postsecondary vocational schools or in industrial settings where retraining will be continually taking place. Both SIGI and Discover have already announced plans to have available an adult version of their systems in the very near future.

Counseling

With the emphasis in both the inventory and information components of the career guidance model shifting so extensively to being computer-based, where can the industrial/technical student or worker expect to find help putting everything together. It is this authors guess that as the number of computer-based guidance systems grow the number of counselors will not shrink, and they may even get larger. And, where counselors are functioning they will have more time for true counseling activities because they no longer will bear the burden of needing to provide much of the inventory and information service. Herr and Cramer (1984) define career counseling as:

1. a largely verbal process in which
2. a counselor and counselee(s) are in dynamic interaction and in which
3. the counselor employs a repertoire of diverse behaviors
4. to help bring about self-understanding and action in the form of "good" decision-making in the counselee, who has responsibility for his or her own actions.(p.389)

Although the repertoire referred to above is beyond the scope of this paper, there are many theories and techniques from which to choose that facilitate the key outcomes of self understanding and decision-making. While much of this counseling needs to occur in one-to-one relationships, a significant portion will also be handled through various group processes. While the counseling will occur among youth in high school vocational and non-vocational programs, much more of it will occur after graduation from high school. The setting for this counseling will be either in various postsecondary institutions that offer industrial/technical training or in industry itself where job changing will become the rule rather than the exception. Sineck (1975) provided a partial listing of the motivations or causes for career changes which included such factors as initial career not appropriate, insufficient challenge, work pressures and deadlines, and insufficient time for leisure among the 25 listed. An examination of the list reveals that many of the causes are of a personal nature and much of the counseling at this level will need to deal with personal adjustment to life as well as more traditional career decision-making. Some of the many counselees and problems one could expect to find among adult settings include women entering or reentering the workforce, older workers with problems related to aging, those unemployed due to technological change, first level supervisors experiencing burnout, dual career family problems, and preretirement and retirement planning and adjustment (Herr and Cramer, 1984). Whether counseling is provided by those trained and licensed to perform this service or by those who are not, but find themselves

in positions where they are called upon to act as a counselor, the skills required will be of the high touch rather than the high tech nature.

Placement and Follow-up

Since the early seventies when the National Advisory Council for Vocational Education (1972) issued its sixth report on the topic of vocational guidance in which job placement was advocated as a responsibility of public vocational education programs there has been a great deal of growth in this area. Many vocational programs at both the secondary and postsecondary level have instituted job placement programs. In some of these programs there is a designated job placement coordinator, and the whole process is centralized, while in others each vocational skill area or instructor is expected to provide their own students with job placement. With the growth of cooperative education at the high school level as a means of providing skill training in industrial/technical occupations, much of the need for placement is being satisfied even before the student leaves school. Regardless of the model employed there are certain elements of a job placement program that needs to exist. Brown and Feit (1978) described a five part placement model which is largely in agreement with the other literature in this field. The model includes:

1. Determining students needs for placement.
2. Surveying available job opportunities.
3. Prereferral assessment and training (employability skills).

4. Referral of students to job openings.

5. Student follow-up.

In addition to working with an advisory committee and visiting employers to develop job openings, the placement coordinator spends a good deal of time with students in the area of employability skills development. This includes such things as:

1. Evaluating personal characteristics realistically.
2. Investigating job requirements.
3. Understanding employer expectations.
4. Locating job openings.
5. Writing a resume.
6. Writing letters of application.
7. Completing application forms.
8. Applying by telephone for an interview.
9. Evaluating an employing organization.
10. Building confidence prior to an interview.
11. Responding well in an interview.
12. Evaluating a job and career growth potential.
13. Following up on an interview.
14. Learning and carrying out job responsibilities.
15. Maintaining good social relations on the job.
16. Evaluating job performance.
17. Investigating the need for more training and education.
18. Starting and successfully maintaining a business. (Placement Services, 1977, p. 42)

Both expertise and research in this area has pointed out the need to provide job seekers with employability skills. Failure in these skills is often responsible for lack of job hunting success as well as termination from jobs already held. Short term follow-up of individuals already placed on the job can make it possible to continue to aid in job adjustment. Longer term follow-up over one or more years time can add information to our knowledge base concerning the viability of our programs.

With the fast changing industrial/technical job market it is

likely that in the future the need for job and educational placement will occur more frequently. That is, the average industrial/technical worker will need to be placed in either a new training program or job a number of times over the course of a career. While the public secondary and post secondary industrial/technical training programs can be expected to continue and even expand current placement programs, much of this activity will also take place in Department of Labor programs such as the United States Employment Service (USES) and Joint Training Partnership Act (JTPA) program, and in industry itself where retraining and placement may take place within a company.

As in the first two components of the career guidance model, the computer will also be utilized extensively in job placement for both storing information about job openings and for matching job seekers with available jobs. Although this part of the process will be made easier by using the computer, the necessity for job placement specialists with good counseling, teaching and interpersonal skills will continue to exist to deal with the problems individuals will encounter in an industrial/technical world of constant change.

References

Brown, D., & Feit, S.S. (1978). Making job placement work. Vocational Guidance Quarterly, 27, (2), 176-183.

Engen, H. B., & Kapes, J. T. (1984). Does testing have a future in school counseling? The School Counselor, 31(4), 318-328.

Harris-Bowlsbey, J. (1983). The impact of computers on career guidance and assessment. In Rodgers, R. E. (Ed.), Measurement trends in career and vocational education. (pp. 63-76). San Francisco: Jossey-Bass.

Herr, E. L., & Cramer, S. H. (1984). Career guidance and counseling through the life span: Systematic approaches (2nd ed.). Boston: Little, Brown & Company.

Impellitteri, J. T. (1968). The development and evaluation of a pilot computer-assisted occupational guidance program (Final Report). University Park, PA: Vocational Education Department, The Pennsylvania State University.

Kapes, J. T. & Mastie, M. M. (1982). A counselor's guide to vocational guidance instruments. Falls Church, VA: National Vocational Guidance Association.

Katz, M. R. & Skatkin, L. (1983). Characteristics of computer-assisted guidance. The Counseling Psychologist, 11, 15-31.

Levitan, S. A. & Johnston, W. B. (1973). Work is here to stay, alas. Salt Lake City, UT: Olympus Publishing Company.

McKinley, B. (1984). Standards of quality in systems of career information. Journal of Counseling and Development, 63, 149-152.

National Advisory Council on Vocational Education. (1972, June). Counseling and guidance: A call for change (6th Report). Washington, DC: Author.

Naisbett, J. (1982). Megatrends: Ten new directions transforming our lives. New York: Warner Books.

O'Toole, J. (Ed) (1973). Work in America. Cambridge, MA: MIT Press.

Parson, F. (1909). Choosing a Vocation. Boston: Houghton Mifflin.

Placement Services: A Training Manual. (1977). Ann Arbor, MI: Prakken Publications, Inc.

Pyle, K. R. (1984). Career counseling and computers: Where is the creativity? Journal of Counseling and Development, 63, 141-144.

Sineck, D. (1975). Counseling older persons: Careers, retirement, dying. Ann Arbor, MI: ERIC Clearing House on Counseling and Personnel Services (CG400129).

Super, D. E. (1953). A theory of vocational development. American Psychologist, 8, 185-190.

Super, D. E., Stareshevsky, R., Matlin, N. & Jordaan, J. P. (1963). Career development: Self-concept theory. New York: College Entrance Exam Board.

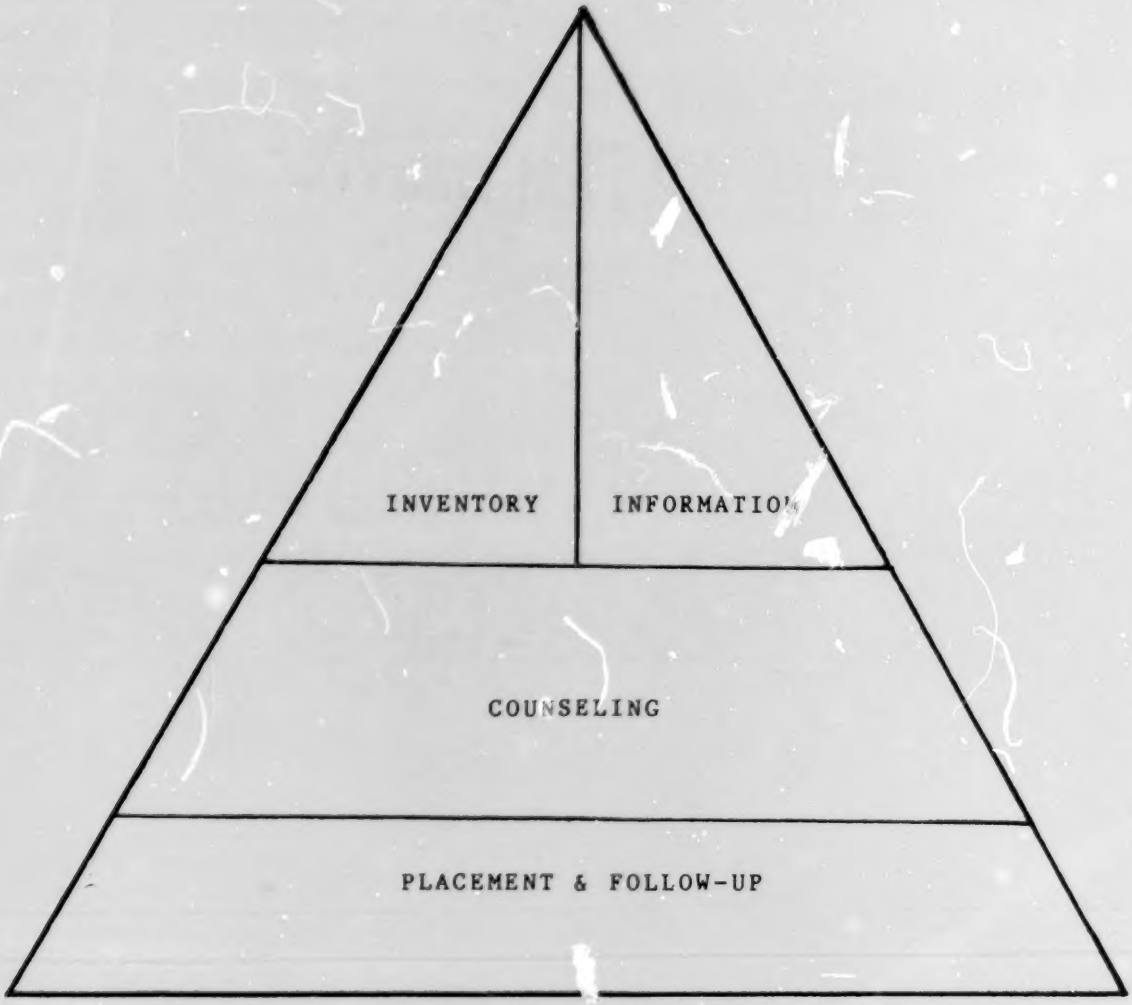

Figure 1. A Comprehensive Career Guidance Model

Note: The author is indebted to Arthur Wellington who first presented the idea of this four part vocational guidance model in a graduate course in counseling at Penn State University in 1967. The use of the term career instead of vocational guidance reflects the general movement of the field towards viewing career development as a life-long process.